Fractions Arithmetic

June 2022 Paper 2

Question	Answer	Mark	Mark scheme	Additional guidance
2	$\frac{7}{10}$	B1	oe fraction	

Question	Answer	Mark	Mark scheme	Additional guidance
12 (a)	$\frac{7}{12}$	M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg. $\frac{5}{12}$, $\frac{2}{12}$	
		A1	for $\frac{7}{12}$ oe eg $\frac{14}{24}$, $\frac{21}{36}$, $\frac{28}{48}$, $\frac{35}{60}$, $\frac{42}{72}$, …….	Ignore errors in cancelling following sight of an equivalent fraction to $\frac{7}{12}$
(b)	$\frac{3}{16}$	M1	for method to multiply fractions, eg $\frac{3\times5}{10\times8}$ (= $\frac{15}{80}$) **or** simplifies the calculation eg $\frac{3}{2}\times\frac{1}{8}$ **or** for an answer equivalent to $\frac{3}{16}$ unsimplified	
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
15	$\frac{5}{14}$	M1	for method to multiply fractions, eg $\frac{6 \times 5}{7 \times 12}$ **or** to simplify, eg $\frac{1}{7} \times \frac{5}{2}$ **OR** for a fractional answer equivalent to $\frac{5}{14}$	$\frac{30}{84}, \frac{15}{42}, \frac{10}{28}$
		A1	cao	

Question	Answer	Mark	Mark scheme	Additional guidance
17	$3\frac{3}{5}$	M1	for inverting to give $\frac{3}{5}\times 6$ oe **OR** for two correct fractions with a common denominator eg $\frac{18}{30}\div\frac{5}{30}$	
		M1	for method to calculate eg $\frac{3\times 6}{5}$ or $\frac{3\times 30}{5\times 5}$ or $\frac{18}{5}$ or $\frac{90}{25}$ oe	
		A1	for $3\frac{3}{5}$ or any other equivalent mixed number eg $3\frac{15}{25}$	

Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	$2\frac{1}{3}$	M1	for a method to subtract by writing both fractions with a common denominator with at least one correct numerator, eg. $3\frac{3}{6}-1\frac{1}{6}$ **or** $\frac{3}{6}-\frac{1}{6}\left(=\frac{2}{6}\right)$ **or** $\frac{21}{6}-\frac{7}{6}\left(=\frac{14}{6}\right)$ **or** $\frac{42}{12}-\frac{14}{12}\left(=\frac{28}{12}\right)$	
		A1	for $2\frac{1}{3}$ or an equivalent mixed number	Do not ISW incorrect further work from correct equivalent mixed number
(b)	Shown	M1	for conversion to improper fractions, eg. $\frac{21}{4}$ **or** $\frac{7}{3}$ **or** $\frac{9}{4}$	
		M1	(dep) for method to divide by a fraction, eg. $\frac{21}{4}\times\frac{3}{7}$ **or** $\frac{63}{12}\div\frac{28}{12}$	
		C1	for complete work showing each stage as far as $\frac{9}{4}$ **or** $2\frac{7}{28}$	Must see an intermediate step, eg $\frac{63}{28}$ must be seen and then cancelled or correct cancelling seen before multiplication

Question	Answer	Mark	Mark scheme	Additional guidance
20 (a)	$3\frac{17}{20}$	M1	for finding two fractions with a correct common denominator (multiple of 20), with at least one correct corresponding numerator, eg. $\frac{12}{20}$, $\frac{5}{20}$ or $\frac{32}{20}$, $\frac{45}{20}$	May be from $\frac{3}{5}$ and $\frac{1}{4}$ or from $\frac{8}{5}$ and $\frac{9}{4}$
		A1	for $3\frac{17}{20}$ or an equivalent mixed number SC: B1 for 3.85 if M0 scored	
(b)	shown	M1	for $\frac{8}{3} \times \frac{1}{6}$ oe or $\frac{4}{9} \times \frac{6}{1}$ oe or $\frac{8}{3} \times \frac{9}{4}$ oe	
		A1	for unsimplified fraction which could lead to $\frac{4}{9}$, eg $\frac{8}{18}$ or for $\frac{4}{3} \times \frac{1}{3}$ or $\frac{24}{9} \div 6$ **or** for unsimplified fraction which could lead to $2\frac{2}{3}$, eg $\frac{24}{9}$ **or** for unsimplified fraction which could lead to 6, eg $\frac{72}{12}$	

June 2022 Paper 1

Question	Answer	Mark	Mark scheme	Additional guidance
20	$\frac{39}{88}$	M1	for finding the gap (A) $1-\frac{5}{8}$ $(=\frac{3}{8}=\frac{33}{88})$ **or** (C) $1-\frac{9}{11}$ $(=\frac{2}{11}=\frac{16}{88})$ **or** $\frac{5}{8}+\frac{9}{11}$ $(=\frac{55}{88}+\frac{72}{88}=\frac{127}{88})$	
		M1	for $\frac{9}{11}-\frac{3}{8}(=\frac{72}{88}-"\frac{33}{88}")$ **or** $\frac{5}{8}-\frac{2}{11}$ $(=\frac{55}{88}-"\frac{16}{88}")$ **or** $1-\frac{3}{8}-\frac{2}{11}(=1-"\frac{33}{88}"-"\frac{16}{88}")$ oe **or** $\frac{5}{8}+\frac{9}{11}-1$ $(=\frac{55}{88}+\frac{72}{88}-1)$	
		A1	oe	

Question	Answer	Mark	Mark scheme	Additional guidance
21 (a)	$2\frac{2}{15}$	M1	for a method to subtract using a common denominator with at least one fraction correct (suitable common denominator for original fractions with at least one correct numerator) eg $\frac{57}{15}-\frac{25}{15}$ **or** $(3)\frac{12}{15}-(1)\frac{10}{15}$	Use of decimals gets no credit unless it leads to a correct fraction
		A1	for $2\frac{2}{15}$ oe eg $\frac{32}{15}$	ISW incorrect conversion from improper fraction to mixed number or incorrect simplification of improper fraction.
(b)	Mistake identified	C1	for explaining that Kevin did not convert to the correct mixed number **Acceptable examples** In his answer $\frac{9}{24}$ should have been $\frac{11}{24}$ The 9 should be 11 He has not got the numerator right in his final answer He simplified into the mixed number incorrectly He has not put the remainder as the numerator $1\frac{9}{24}$ would give you $\frac{33}{24}$ rather than $\frac{35}{24}$ $\frac{35}{24}=1\frac{11}{24}$ **Not acceptable examples** He should have used a common denominator He has not simplified his answer He should have done keep, flip, change He converted the fraction wrongly The answer should be $1\frac{10}{24}$	Figures may be seen in the question space.

Question	Answer	Mark	Mark scheme	Additional guidance
21	$4\frac{7}{8}$	M2	for a complete method, eg $7 - 2 + \frac{3}{8} - \frac{4}{8}$ condoning error with one numerator **or** for $\frac{59}{8} - \frac{5}{2} = \frac{59}{8} - \frac{20}{8}$ $(=\frac{39}{8})$ with no more than one error **OR** for an answer of 4.875	
		(M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg $\frac{3}{8}, \frac{4}{8}$ **or** for converting both to improper fractions, eg $\frac{59}{8}, \frac{5}{2}$ **OR** for 7.375 – 2.5)	At least one improper fraction must be correct Both decimals must be correct
		A1	for $4\frac{7}{8}$ oe eg $4\frac{14}{16}$	Any equivalents must be a mixed number

June 2020 Paper 1

Question	Answer	Mark	Mark scheme	Additional guidance
21	Shown	M1	for conversion to improper fractions eg. $\frac{7}{3}$ **or** $\frac{15}{4}$	Need not be shown with operators
		M1	(dep) for method to multiply fractions, eg. $\frac{7\times15}{3\times4}\left(=\frac{105}{12}\right)$ **or** $\frac{28\times45}{12\times12}\left(=\frac{1260}{144}\right)$ oe	
		C1	for complete working showing each stage as far as $\frac{35}{4}$ or $8\frac{9}{12}$	

November 2021 Paper 1

Question	Answer	Mark	Mark scheme	Additional guidance
22	$1\frac{8}{15}$	M2	for a complete method, eg $4 - 2 + \frac{3}{15} - \frac{10}{15}$ condoning error with one numerator **or** for $\frac{21}{5} - \frac{8}{3} = \frac{63}{15} - \frac{40}{15} (= \frac{23}{15})$ with no more than one error	
		(M1	for finding two fractions with a correct common denominator, with at least one correct corresponding numerator, eg $\frac{3}{15}, \frac{10}{15}$ **or** for converting both to improper fractions, eg $\frac{21}{5}, \frac{8}{3}$)	At least one improper fraction must be correct
		A1	$1\frac{8}{15}$ oe	Any equivalents must be a mixed number